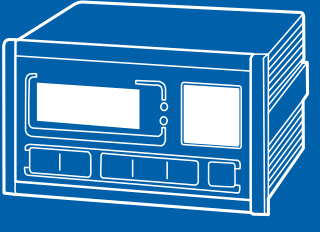
INDUSTRIAL WEIGHING SOLUTION™

CI-6000A SERIES

Weighing Indicator



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OWNER'S MANUAL

CAS

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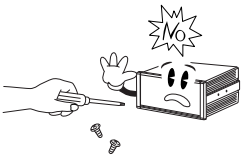
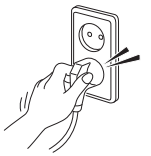
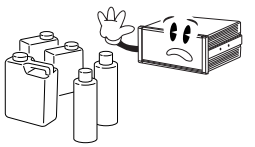
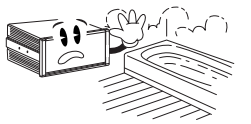
1. Introduction

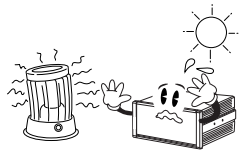
Thank you for purchasing the CAS CI-6000A weighing indicator.
We have designed this equipment with many advanced features, high quality construction, and user-friendly menu driven programming.
CAS indicator is shaped firmly and delicately designed to coincide with the special requirements of several industrial fields and includes many functions and various external interfaces. Also, it contains help display functions to be used easily.
Before using CI-6000A, It is recommended to read this manual carefully and to apply the function application fully.

Precautions

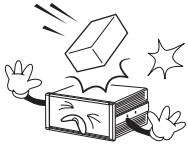
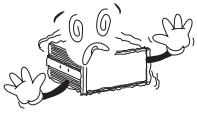
Observe the following safety precautions :

⚠ Warning

When any damage or defect occurs, contact your CAS authorized dealer immediately for proper repair.	Insert plug firmly to wall outlet to prevent electric shock.	Scale must be grounded to minimize electricity static. This will minimize defect or electric shock.
		
Do not pull the plug by its cord when unplugging. Damaged cord could cause electric shock or fire.	To prevent from fire occurring, Do not place or use the scale near flammable or corrosive gas.	To reduce electric shock or incorrect reading, Do not spill water on the scale or place it in humid condition.
		

Avoid placing the scale near heather or in direct sunlight.	
	

Attention

For consistent and accurate reading, maintain periodical check by your CAS authorized dealer.	Avoid sudden shock to the scale. Internal mechanism could by damaged.	Attach the rubber pad to the bottom of the indicator. Elimination is possible.
		
Place the scale on firm and temperature consistent environment.	Keep the scale away from the electromagnetic generation devices. This may interfere with accurate reading.	
		

Our Dealers :

CAS feels that each of its valued customers should get the best service available.

Whether it's the initial installation of our product, maintenance/repair work, or simply answering questions about our products, CAS Corporation and all of its Authorized Dealers are highly trained to assist you with any need regarding CAS products.

2. Features

1) Features

- ■ High speed, High accuracy
- ■ The adoption of high speed micro processor
- ■ A/D conversion speed : Maximum 200 times/sec
- ■ Appropriate for weighing and measurement system
- ■ Easy operation and various options
- ■ Simple and prompt Full Digital Calibration
  (SPAC^{TM} : Single pass automatic span calibration)
- ■ RFI/EMI screened
- ■ WATCHDOG circuitry (System restoration)
- ■ WEIGHT BACK-UP
  (Weight memory at sudden power failure)

2) Main Functions

- ■ Save date, time and calculated data at sudden power failure
- ■ Various specification of weight conversion speed
  (Digital filter function)
- ■ Various printer connection (RS-232C Serial printer)
- ■ Tare weight setting with keys
- ■ Storage of measured times
- ■ Read / Write Set-point values(7) through the PC
  - each to set-point code(0~49)
- ■ Read / Write Set Mode values(23) through the PC
- ■ External 6 relays for input / 8 relays for output
- ■ Users can set the max. weight and a division freely
- ■ Control various external equipment by inner external input/output
- ■ Print date and time by built-in clock
- ■ Self hardware test.

3. Technical Specification

■ Analog Part & A/D Conversion

Load Cell Excitation Voltage	8 x 350Ω load cells
Zero Adjustment Range	0.05mV ~ 20mV
Input Sensitivity	0.6μV/D
System Linearity	Within 0.01% of FS.
A/D Internal Resolution	1 / 1,000,000
A/D External Resolution	5,000 dd, 10,000 dd (Max)
A/D Conversion Speed	Maximum 200 times/sec

■ Digital Part

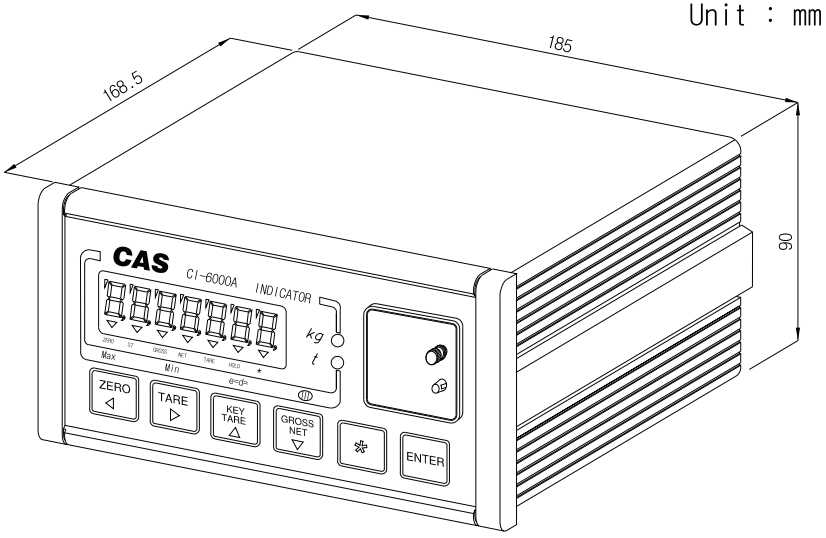
Span Calibration	Full Digital Calibration : SPAC™ (Single pass automatic span calibration)
Input Noise	Under ±0.3μVpp
Input Impedance	Over 10M Ω
Display	VFD (7 digit)
Size of letter	13mm (Height)
Minimum division	x1, x2, x5, x10, x20, x50
Display below zero	"-"
"ZERO" ▼	Current weight of "0" kg
"STABLE" ▼	Weight is stable
"GROSS" ▼	Gross weight is displayed
"NET" ▼	Net weight is displayed
"TARE" ▼	Tare function is activated
"HOLD" ▼	Hold function is activated
" * " ▼	" * " key is pressed (print key) Automatic print is set.

■General Specification

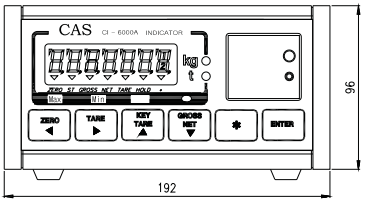
Power	AC 100 ~ 240V (50/60 Hz) Input	
	DC +3.3V	Digital Logic
	DC +24V	External I/O
	DC +5V	Analog, Load Cell
	AC 3.6V	VFD
Product Size	192(W) x 189(D) x 96 (H)	
Temperature Range	-30℃ ~ +60℃	
Product Weight	Approx. 2.4 kg	

4. Measure of Appearance

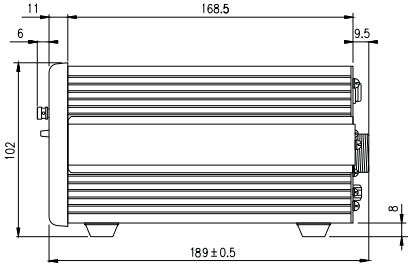
Unit : mm



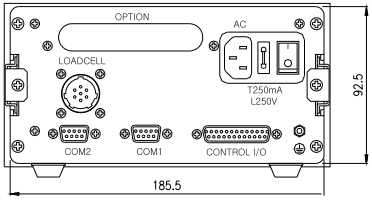
Unit : mm



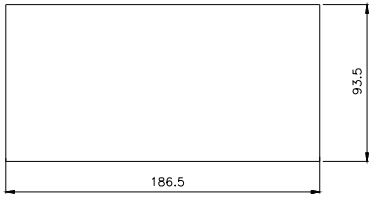
FRONT



SIDE



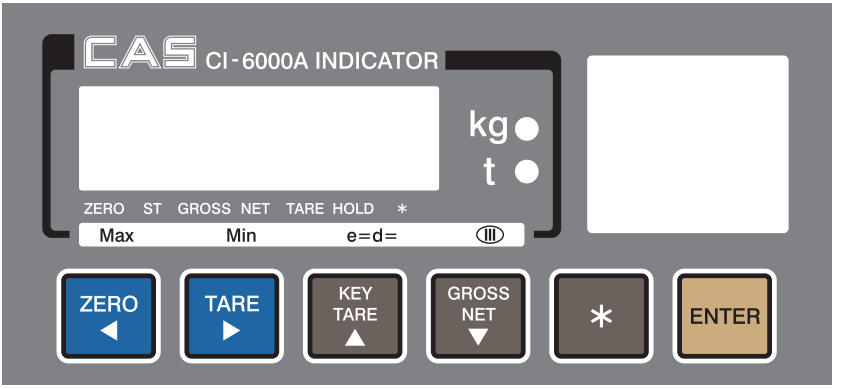
REAR



INSERT PANEL SIZE

5. Front Panel

1) VFD Display



■ Display Lamp(▼)

ZERO lamp	Current weight is 0 kg
ST lamp	Weight is stable
GROSS lamp	Current weight is gross weight
NET lamp	Current weight is net weight
TARE lamp	Tare weight is saved
HOLD lamp	Lamp is on when HOLD function is activated
* lamp	Lamp is on only when "*" key is pressed. And F23 is set to "1" in the set mode
	Automatic print should be set to "1" in set mode (F41 = 1 or 2, F42 = 1)

2) Keyboard

▲ ▼ ◀ ▶	You can use these keys as numeric keys
▲ ▼	Change the set value ▲ key increases set value and ▼ key decreases set value
◀ ▶	Change the position of cursor ▶ key moves one digit to right, ◀ key moves one digit to left
Use 1	Enter tare weight
Use 2	Enter set-point value
Use 3	Enter the set value in TEST, CAL, SET mode

■

[ZERO]Key

Used to remove small variations in the indicator's zero

■

[TARE] Key

Used to weigh an item by using the container
Current weight is memorized as tare weight
If you press TARE key in unload condition, tare setting is released

■

[KEY TARE] Key

When you already know the tare weight, press KEY TARE Key
and enter tare weight by pressing arrow keys and save it by pressing ENTER key

■

[G/N KEY] Key

Toggles the display between gross and net weight
G. weight lamp on - gross weight / N. weight lamp on - net weight
If tare weight is saved, tare plus item's weight is gross weight and only item's weight is net weight
You can prohibit using of keyboard by pressing G/N key for 5 sec.
To use keyboard again, press G/N key for 5 sec

■

[* KEY]Key

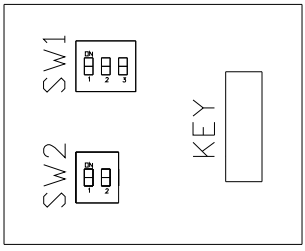
Used to set set-point value for batching operation.
(Press * key for 3 seconds more and take off)
You can select this function in set mode F23
0 : Do not use.
1 : PRINT Key.
2 : HOLD Key

■

[ENTER KEY] Key

Set set-point code for batching operation.(00~49)
(Press the ENTER key for 3 seconds more and take off)
You can select this function in set mode F24.
0 : Do not use.
1 : TOTAL PRINT key.
2 : START key for batching operation.
3 : STOP key for batching operation.
In calibration, test, set mode : Save current condition and exit

3) Slide Switch



SW1 DIP 1	Calibration mode	
	Switch DIP 1 on	Go to calibration mode
	Switch DIP 1 off	After calibration, it returns to weighing mode

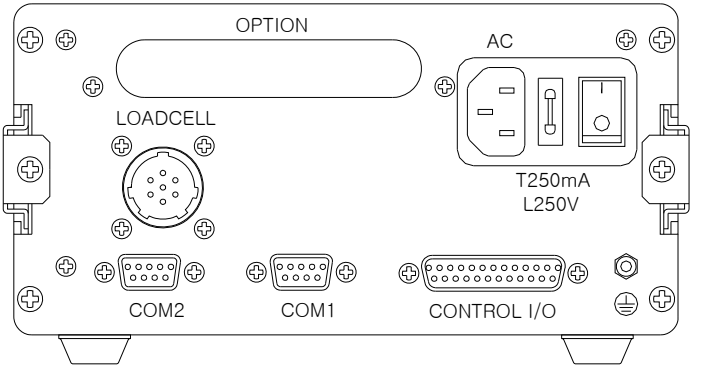
SW1 DIP 2	Set mode	
	Switch DIP 2 on	Go to set mode.
	Switch DIP 2 off	After set mode, it returns weighing mode.

SW1 DIP 3	Test mode	
	Switch DIP 3 on	Go to test mode.
	Switch DIP 3 off	After test, it returns to weighing mode

SW2 DIP 1	It is used in calibration mode when zero value is high
	If you set DIP 1 to on, zero value is decreased.

SW2 DIP 2	It is used in calibration mode when zero value is low
	If you set DIP 2 to on, zero value is increased

6. Rear Panel

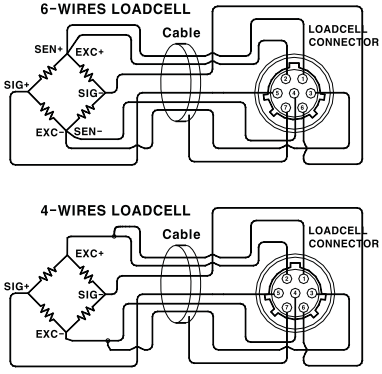


COM1	RS-232 cable(2 : TxD, 3 : RxD, 5,7 : Gnd) - F33 = 1 ~ 4 function is enable (both of **Set-point** and **Set-mode**) to read and write - Computer, sub-display and printer	
COM2	RS-232 cable(2 : TxD, 5,7 : Gnd) - F36 = 1 ~ 2 function is enable to read only RS-485/422 cable(6 : Rx+, 7 : Rx-, 8 : Tx+, 9 : Tx-) - F36 = 1 ~ 4 function is enable(**Set-point**) to read and write	
LOAD CELL	Port for connecting. 4-wires, 6-wires load cell	
CONTROL I/O	External input	ZERO, TARE,START,STOP,*,ENTER key
	External output	External output for batching operation
OPTION	When option is used, please connect	
AC	100 ~ 240VAC are available	
FUSE	T250mA L250V	

7. How To Install

1) Load cell connection

Connect load cell connector to load cell port which is in the backside CI-6000A
* Connecting method



PIN
1 (EXC+)
2 (SEN+)
3 (EXC-)
4 (SEN-)
5 (SIG+)
6 (SIG-)
7 (SHIELD)

Note 1. In case of 4 wires L/C connect EX+ with SEN+, and connect EX- with SEN-.

Note 2. Wire color can be different depending on the load cell's manufacturer or its model

2) Power

Adjusted to 220V 50/60Hz at factory.
(If you want to use 110V, adjust 110V/220V jump wire which is located in the inner part of CI-6000A)

8. Calibration Mode

1) How to enter the Calibration Mode.

Open the front cover of indicator and set SW1 DIP1 to on.
At this time, CAL message is shown on the display and CAL 1 is started.
After done and off the SW1 DIP1, back to the weighing mode.

2) Availabe keys.

▲ ▼ KEY : Change the set value.
▲ key increases set value and ▼ key decreases set value.

▶ ◀ KEY : Change the position of cursor.
▶ key moves one digit to right, ◀ key moves one digit to left.

ENTER KEY : The program is moved into next menu.

3) Calibration menu(CAL1~CAL7)

CAL 1 : Maximum capacity
CAL 2 : Minimum division
CAL 3 : Setting Weight
CAL 4 : Zero calibration
CAL 5 : Span calibration
CAL 6 : Check Micro Span calibration
CAL 7 : Weight Factor

CAL 1

FUNCTION : Maximum Capacity Set (Range : 1 ~ 99,999)		
KEY	**DISPLAY**	**DESCRIPTION**
▲ ▼ : Increase or decrease of number ► ◄ : Shift of cursor position ENTER : Save and go to next menu	C = 05000	5000 kg
	C = 0500.0	500.0 kg(First decimal point)
	C = 050.00	50.00 kg (Second decimal point)

Note 1. The maximum capacity means the maximum weight of the indicator.
Note 2. The max. weight is changed depending on the decimal point.

CAL 2

FUNCTION : Minimum Division Set (Range : 0.001 ~ 50)		
KEY	**DISPLAY**	**DESCRIPTION**
▲ ▼ : Increase or decrease of number ENTER : Save and go to next menu	d = 1	1 kg
	d = 0.2	0.2 kg (First decimal point)
	d = 0.05	0.05 kg (Second decimal point)
	d = 0.001	0.001 kg (Third decimal point)

Note 1. The minimum division means the value of one division.
Note 2. The value of one division is changed depending on the decimal point.
Note 3. External resolution is obtained by dividing the maximum capacity into the min. division.
Set the resolution to be within 1/10,000.
If it is over 1/10,000, error message "Err 20" is displayed

CAL 3

FUNCTION : Setting Weight In Span CALIBRATION		
KEY	**DISPLAY**	**DESCRIPTION**
▲ ▼ : Increase or decrease of number ► ◄ : Shift of cursor position ENTER : Save and go to next menu	L=05000 L=0500.0	5000 kg 500.0 kg (First decimal point)

Note 1. The setting weight should be within the 10 % to 100 % of maximum weight
100% of maximum weight is set as a default but you can change it for your needs
If the setting weight is under 10%, error message "Err 22" is displayed
If the setting weight is over 100%, error message "Err 23" is displayed

CAL 4

FUNCTION : Zero Calibration		
KEY	**DISPLAY**	**DESCRIPTION**
ENTER : Zero calibration and next ZERO : Only zero calibration TARE : Only span calibration	CAL 4 Analog value of load weight state - - -	Remove an item from the platter and press ENTER key. Zero calibration. Zero calibration is finished. You will go to span calibration(CAL 5)automatically.

Note 1. If Zero calibration is done without any error, You will go to span calibration (CAL 5) automatically.
Note 2. If the zero value is too low, error message "Err 27" is displayed.
Note 3. If the zero value is too high, error message "Err 26" is displayed.
Note 4. If you want to do only zero calibration, unload the platter and press the "ZERO" key.
In a few moment, you will see "ZEro" and "CAL End" messages are displayed.
Set SW1 DIP1 to OFF and then return to the weighing mode.

CAL 5

FUNCTION : Span Calibration		
KEY	**DISPLAY**	**DESCRIPTION**
ENTER : Span calibration	CAL 5 Analog value of load weight state - - -	Load the weight which was set in CAL 3 and press ENTER key. Span calibration. Span calibration is finished. You will go to micro span calibration(CAL 6) automatically.

Note 1. If span calibration is done without any error,
you will go to micro span calibration (CAL 6) automatically.
Note 2. If the span value is low,
error message "Err 24" is displayed. Calibrate with lower resolution.
Note 3. If the span value is high, error message "Err 25" is displayed.

CAL 6

FUNCTION : Check Micro Span Calibration		
KEY	**DISPLAY**	**DESCRIPTION**
ENTER : Save and go to next menu	500.0 ▽▽▽▼▽▽▽	Setting weight is shown on the display. Check the setting weight and set SW1 DIP1 to off.

Note 1. Confirm if the displayed weight is equal to the setting weight that you have set in CAL 3 and remove the weight from the platter.
If "0" is displayed, set SW1 DIP1 to OFF then you will go to normal mode.
Note 2. The bias is "0" when the central lamp lights up as above display.
Each lamp means the bias of -0.3, -0.2, -0.1, 0, 0.1, 0.2, 0.3 from the left lamp

CAL 7

FUNCTION : Weight Constant Calibration		
KEY	**DISPLAY**	**DESCRIPTION**
▲ ▼ ► ◄ : Enter password. ENTER : Exit	FACtor	Enter password.

Note 1. Users do not have to use this menu, since it is used for calibration test without a weight.

4) Error Message (In CAL Mode)

Error 20

▣ Reason

The resolution exceeds 1/10,000

☞ Solution

Lower the resolution.

The resolution = allowed weight/one division.

Modify the allowed weight in CAL1 or modify the division in CAL2 so that the resolution is below 1/10,000

Error 22

▣ Reason

The weight for span calibration is lower than 10% of the maximum capacity of the indicator

☞ Solution

Set the weight for span calibration in CAL 3 to be greater than 10% of the maximum capacity

Error 23

▣ Reason

The weight for span calibration exceeds 100% of the maximum capacity of the indicator

☞ Solution

Set the weight for span calibration to be within the maximum capacity of the indicator in CAL 1

Error 24

▣ Reason

Span value is too low

☞ Solution

Load cell is damaged or setting of current resolution is not possible.

Calibrate with less resolution

Error 25

▣ Reason

Span value is too high

☞ Solution

Load cell is damaged or setting of current resolution is not possible.
Calibrate with less resolution

Error 26

▣ Reason

Zero value is too high

☞ Solution

Check whether the platter is empty
Remove the setting cover and set SW2 DIP2 to on so that the zero value is increased. Proceed calibration again after checking in test mode 3

Error 27

▣ Reason

Zero value is too low

☞ Solution

Check whether the platter is empty.
Remove the setting cover and set SW2 DIP1 to on so that the zero value is decreased. Proceed calibration again after checking in test mode 3

Error 28

▣ Reason

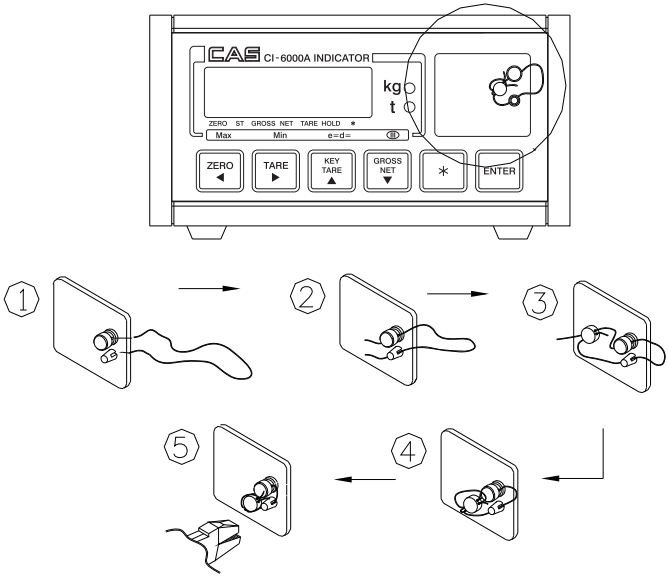
The weight is unstable

☞ Solution

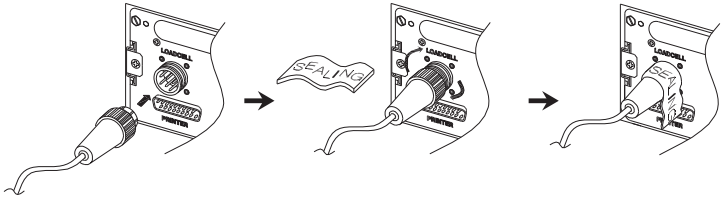
Check whether load cell is properly connected

5) Sealing Method

① Sealing method of cal switch



② Sealing method of Load Cell Connector



9. Set Mode

1) How to go to set mode

Open the front cover of indicator. set SW1 DIP2 to on. Then set mode is started.
At this time, F01 message is shown on the display after "SET Mod" message.

① F 0 1 : You can select the menu that you want to set
② Enter number of set menu by pressing the arrow keys and then press ENTER key.
③ F 0 1 1 : F01 is set to 1.
④ Enter number of set menu by pressing the arrow keys and then press ENTER key.

2) Availabe keys.

▲ ▼ KEY : Change the set value.
▲ key increases set value and ▼ key decreases set value.

▶ ◀ KEY : Change the position of cursor.
▶ key moves one digit to right, ◀ key moves one digit to left.

ENTER KEY : Save current setting value and go to menu selection mode.

3) Set Menu(F01~F59)

General setting	
F01	Decimal Point Adjustment
F02	Weighing Unit
F03	Analog to Digital Conversion Speed
F04	Digital Filter
F05	Motion Detection Condition
F06	Automatic Zero Tracking Compensation
F07	Weight Backup
F08	Set Zero Range
F09	Conditions of ZERO, TARE & START Keys
F10	Set Hold Type

Batching Operation Function	
F11	Zero Band
F12	Optional Preliminary Weight
F13	Preliminary Weight
F14	Final Weight
F15	Free Fall Weight
F16	High Limit Weight
F17	Low Limit Weight
F18	Timer - Start Delay Time
F19	Timer - Operating Delay Time of Finish Signal
F20	Measurement Mode
F21	Timer - Start Delay Time of Finish Signal
F22	Off Range of Finish Signal
F23	A Use of "*" key
F24	A Use of ENTER key

Serial Interface (COM1, COM2)	
F30	Device ID
F31	COM1 Baud Rate
F32	COM1 Usage
F33	COM1 Output Mode
F34	COM2 Baud Rate
F35	COM2 Usage
F36	COM2 Output Mode
F37	Output Format of COM1 & COM2
F38	Parity Bit

Print Function	
F40	Line Feed
F41	Printer
F42	Automatic / Manual Print
F43	Printing Format

F44	Output the user's message
F45	Date Change
F46	Time Change

User's Utility	
F50	Set-point input type selection
F51	Load cell type selection
F52	Buzzer On/Off selection

Options	
F55	Select the Option Analog Out (Option -1) : 4~20mA Analog Out (Option -2) : 0~10V BCD Out (Option -3) :
F56	Output Logic of BCD Out
F57	Analog Output Adjustment at Display Zero
F58	Analog Output Adjustment at Maximum Capacity

F01 ~ F03
F05 ~ F10
F18 ~ F24
F40 ~ F43
F50 ~ F52

These items of SET MODE are possible to be red & written from PC (Set Mode Values)

F11 ~ F17

These items of SET MODE are possible to be red & written from PC (Set Mode Values)

① General function

F01

FUNCTION : Decimal Point Adjustment			
Set value (0 ~ 3)	DISPLAY	DESCRIPTION	
	F01 0	No Decimal Point	(ex : 12345)
	F01 1	10^1	(ex : 1234.5)
	F01 2	10^2	(ex : 123.45)
	F01 3	10^3	(ex : 12.345)

F02

FUNCTION : Weighing Unit		
Set value (0, 1)	DISPLAY	DESCRIPTION
	F02 0	Kilogram (kg)
	F02 1	Ton (t)

F03

FUNCTION : A/D Conversion Speed				
Set value (0 ~ 9)	DISPLAY	DESCRIPTION	DISPLAY	DESCRIPTION
	F03 0	20 times/sec.	F03 5	120 times/sec.
	F03 1	40 times/sec.	F03 6	140 times/sec.
	F03 2	60 times/sec.	F03 7	160 times/sec.
	F03 3	80 times/sec.	F03 8	180 times/sec.
	F03 4	100 times/sec.	F03 9	200 times/sec.

F04

FUNCTION : Digital filter		
Set value (00 ~ 99)	DISPLAY	DESCRIPTION
	F04 10	10 time average value
	F04 50	50 times average value
	F04 99	99 times average value

Note 1. Adjust the set value according to the condition.

F05

FUNCTION : Motion Detection Condition		
	DISPLAY	DESCRIPTION
Set value (00 ~ 99)	F05 12	Stable lamp is off even with the change of only 1 division for 1 sec.
	F05 56	Stable lamp is on with changing of the weight below 5 division for 3sec.
	F05 88	Stable lamp is on with changing of the weight below 8 division for 4sec.

Note 1. The first digit indicates division and the second digit indicates sec.
but have to divide it into 2 on the display.

F06

FUNCTION : Automatic Zero Tracking Compensation			
	DISPLAY	DESCRIPTION	
Set value (0 ~ 9)	F06 0	None	Auto-zero tracking will remove small variations automatically
	F06 1	0.5 digit	
	F06 5	2.5 digit	
	F06 9	4.5 digit	

F07

FUNCTION : Weight backup		
	DISPLAY	DESCRIPTION
Set value (0 , 1)	F07 0	Weight backup is OFF
	F07 1	Weight backup is ON

Note 1. Memorize the current weight at sudden power failure.

F08

FUNCTION : Set Zero Range		
	DISPLAY	DESCRIPTION
Set value (0, 1)	F08 0	Zero key is operated within 2% of max. weight
	F08 1	Zero key is operated within 10% of max. weight

F09

FUNCTION : ZERO, TARE & START keys Availability		
Set value (0,1)	DISPLAY	DESCRIPTION
	F09 0	Always
	F09 1	Works when weight is stable

F10

FUNCTION : Set Hold Type		
Set value (0~2)	DISPLAY	DESCRIPTION
	F10 0	Average hold : Compute the average weight of oscillating weights
	F10 1	Peak hold : Compute the maximum weight among oscillating weights
	F10 2	Sampling hold : Compute the moment weight of oscillating weights.

Note 1. You have to set F23 to 2 in set mode.
Note 2. The hold function is released when it is in zero range or over load automatically.

② Batching operation function

F11

FUNCTION : Zero Band
Set zero band value which will be used in batching operation

F12

FUNCTION : Optional Preliminary Weight
Set optional preliminary weight which will be used in batching operation

F13

FUNCTION : Preliminary Weight
Set preliminary weight which will be used in batching operation

F14

FUNCTION : Final Weight
Set final weight which will be used in batching operation

F15

FUNCTION : Free Fall Weight
Set free fall weight which will be used in batching operation

F16

FUNCTION : High Limit Weight
Set high limit weight which will be used in batching operation

F17

FUNCTION : Low Limit Weight
Set low limit weight which will be used in batching operation

F18

FUNCTION : Timer – Start Delay Time		
	DISPLAY	DESCRIPTION
Set value (00 ~ 99)	F18 00	No delay
	F18 01	0.1 sec
	F18 99	9.9 sec

F19

FUNCTION : Timer – Operating Delay Time of Finish Signal		
	DISPLAY	DESCRIPTION
Set value (00 ~ 99)	F19 00	Do not use
	F19 10	1.0 sec
	F19 99	9.9 sec

Note 1. This function is used to decide the time of signal output which batching operation is completed.

Note 2. You have to set F19 to 00 if you want to use the F22 function.

If F19 & F22 are set any values at the same time, F22 is disregarded.

Because the priority of F19 is high.

F20

FUNCTION : Measurement Mode			
Set value (0 ~ 4)	DISPLAY	DESCRIPTION	
	F20 0	Do not use.	
	F20 1	Customer Programmed Control mode	Normal batching
	F20 2		Loss-in-Weight batching
	F20 3	Built-in automatic Program mode	Normal batching
	F20 4		Loss-in-Weight batching

F21

FUNCTION : Timer – Start Delay Time of Finish Signal		
Set value (00 ~ 99)	DISPLAY	DESCRIPTION
	F21 00	No delay time
	F21 10	1.0 sec
	F21 99	9.9 sec

Note 1. This function is used to decide the delay time of start- signal of output which the batching operation is completed

F22

FUNCTION : Off Range of Finish Signal		
Set value (00 ~ 99)	DISPLAY	DESCRIPTION
	F22 00	Do not use
	F22 01	Finish signal is off when the weight is within one division
	F22 99	Finish signal is off when the weight is within ninety nine division

Note 1. This function is used to decide the size of output signal which batching- operation is completed.
Note 2. You have to set F19 to 00 if you want to use the F22 function.
If F19 & F22 are set any values at the same time, F22 is disregarded.
Because the priority of F19 is high

F23

FUNCTION : A Use of "*" key		
	DISPLAY	DESCRIPTION
Set value (0 ~ 2)	F23 0	Do not use
	F23 1	PRINT key
	F23 2	HOLD key

Note 1. It is possible to print key (COM1 only) when the usage of COM2(F35) is to set 0. (F35 = 0). That is, F35 is setting to printer.

F24

FUNCTION : A Use of "ENTER" key		
	DISPLAY	DESCRIPTION
Set value (0 ~ 2)	F24 0	Do not use
	F24 1	TOTAL PRINT key
	F24 2	START key in batching operation
	F24 3	STOP key in batching operation

Note 1. It is possible to print key (COM1 only)

③ Serial Interface (COM1, COM2)

Reference

RS-232C Cable			
Connector	Print Key(F23=1,F24=1)	Comm. Spec.	Command
COM1(2,3,5&7)	To be set F35 = 0	TxD, RxD	Read/Write
COM2(2,5&7)	Stream, Transmit weight when it is stable	TxD	Read

RS-422/485			
Connector	Print Key(F23=1,F24=1)	Comm. Spec.	Command
COM2(6,7,8,9)	To be set F35 = 0	TxD, RxD	Read/Write

F30

FUNCTION : Device ID		
	DISPLAY	DESCRIPTION
Set value (00 ~ 99)	F30 01	Device No. 01
	F30 99	Device No. 99

Note 1. It is used for identification of the indicator when system is connected.

F31

FUNCTION : Baud Rate of COM1		
	DISPLAY	DESCRIPTION
Set value (0 ~ 5)	F31 0	600 bps
	F31 1	1200 bps
	F31 2	2400 bps
	F31 3	4800 bps
	F31 4	9600 bps
	F31 5	19200 bps

F32

FUNCTION : A Use of COM1		
	DISPLAY	DESCRIPTION
Set value (0 ,1)	F32 0	Connection with sub-display or computer
	F32 1	Connection with printer

F33

FUNCTION : Output Mode of COM1 (RS-232)		
	DISPLAY	DESCRIPTION
Set value (0~4)	F33 0	No data output
	F33 1	Stream mode
	F33 2	Transmit one time only in stable condition after Unloading to zero
	F33 3	Transmit when data is required * Signal : device ID (F31 : Device ID)
	F33 4	Command Mode

Note 1. in the case of F33=3, if the Device ID is "01", send to the "01" in the hexa mode in the RS232C Simulator or "ALT"+"1" in the Hyper Terminal.

Note 1 : COM 1 : F33 = 4, COM2 : F35 = 1, F36 = 4 Command Mode

Command to CI-6000A												Command description	Indicator to PC
0	1	2	3	4	5	6	7	8	9	10	11		
D	ID		K	Z	CR	LF						ZERO key	Return the received
D	ID		K	T	CR	LF						TARE key	Return the received
D	ID		K	G	CR	LF						GROSS key	Return the received
D	ID		K	N	CR	LF						NET key	Return the received
D	ID		K	S	CR	LF						START key	Return the received
D	ID		K	P	CR	LF						STOP key	Return the received
D	ID		K	B	CR	LF						Print key	Return the received
D	ID		K	C	CR	LF						Total print key	Return the received
D	ID		K	W	CR	LF						Request weight data	Return the received
D	ID		H	T	CR	LF						Request set-point	SEND Format 2
D	ID		H	Z	0	0	0	0	0	CR	LF	Zero band	Return the received
D	ID		H	O	0	0	0	0	0	CR	LF	Optional pre.	Return the received
D	ID		H	P	0	0	0	0	0	CR	LF	Preliminary	Return the received
D	ID		H	F	0	0	0	0	0	CR	LF	Final weight	Return the received
D	ID		H	R	0	0	0	0	0	CR	LF	Free fall weight	Return the received
D	ID		H	I	0	0	0	0	0	CR	LF	High limit weight	Return the received
D	ID		H	L	0	0	0	0	0	CR	LF	Low limit weight	Return the received
D	ID		H	E	0	0	0	0	0	CR	LF	Set-point code	Return the received
D	ID		S	T	CR	LF						Set Mode Value	SEND Format 4

(D, ID : 00~99, CR:0x0d, LF:0x0a)
It is impossible to test with Print Key (+ Total Sum Print Key) (Only possible when F35 = 0)

■ Format 1 [Set Point Write :: COM1/COM2 Port available]
Write the Set-Point values to the CI-6000A with PC

- Writing(Command) & Response Format

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
D	ID		H	A	Set Point Code					,	Zero Band					,
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Opt. Preli, Weight					,	Preliminary Weight					,	Final Weight				
34	35	36	37	38	39	40	41	42	43	44	45	46				
,	Free Fall Weight				,	Hi Limit Weight					,					
47	48	49	50	51	52	53										
Lo Limit Weight					CR	LF										

Note 1 : When you input the Set Point Value, you have to input without decimal point

■ Format 2 [Set Point Read :: COM1/COM2 Port available]
Read the Set-Point values from CI-6000A with PC

- Command Format

0	1	2	3	4	5	6
D	ID		H	T	CR	LF

- Response Format

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
D	ID		H	T	Set Point Code					,	Zero Band					,
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Opt. Preli, Weight					,	Preliminary Weight					,	Final Weight				
34	35	36	37	38	39	40	41	42	43	44	45	46				
,	Free Fall Weight				,	Hi Limit Weight					,					
47	48	49	50	51	52	53										
Lo Limit Weight					CR	LF										

Note 1 : All of Set Point Values are numeric without decimal point.

■ Format 3 [Set Mode Write :: COM1 Port only]
Write the Set-Mode values [F01~F10, F18~F24, F40~F43, F50~F52]
from CI-6000A with PC

- Writing(Command) & Response Format

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
D	ID		S	F	F01	F02	F03	F05		F06	F07	F08	F09	F10
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
F18		F19		F20	F21		F22		F23	F24	F40	F41	F42	F43
30	31	32	33	34										
F50	F51	F52	CR	LF										

■ Format 4 [Set Mode Read :: COM1 Port only]
Read the Set-Mode values from CI-6000A with PC

- Command Format

0	1	2	3	4	5	6
D	ID		S	F	CR	LF

- Response Format

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
D	ID		S	F	F01	F02	F03	F05		F06	F07	F08	F09	F10
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
F18		F19		F20	F21		F22		F23	F24	F40	F41	F42	F43
30	31	32	33	34										
F50	F51	F52	CR	LF										

F34

FUNCTION : Band Rate of COM2		
	DISPLAY	DESCRIPTION
Set value (0 ~ 5)	F34 0	600 bps
	F34 1	1200 bps
	F34 2	2400 bps
	F34 3	4800 bps
	F34 4	9600 bps
	F34 5	19200 bps

F35

FUNCTION : Usage of COM2		
	DISPLAY	DESCRIPTION
Set value (0,1)	F35 0	Connection with printer
	F35 1	Connection with sub-display or computer

F36

FUNCTION : Output Mode of COM2 (RS-232, RS-422/485)			
	DISPLAY	DESCRIPTION	
Set value (0 ~ 4)	F36 0	No data output	
	F36 1	Stream mode	RS-232,RS-422/485
	F36 2	Transmit one time only in stable condition after Unloading to aero	RS-232,RS-422/485
	F36 3	Transmit when data is required * Signal : device ID (F31 : Device ID)	RS-422/485
	F36 4	Command Mode	RS-422/485

Note 1. COM2 connector of rear plate have two mode. One is a RS-232(F36=1, 36=2) mode. Another is a RS-422/485 (F36=1 ~ F36=4).

Note 2. in the case of F36=3, if the Device ID is "01", send to the "01" in the hexa mode in the RS232C Simulator or "ALT" + "1" in the Hyper Terminal.

F37

FUNCTION : Output Format of COM1 and COM2			
	DISPLAY		DESCRIPTION
Set value (0~2)	F37	0	Transmit 22 byte of CAS Format
	F37	1	Transmit 10 byte of CAS Format
	F37	2	Transmit 18 byte of AND Format

F38

FUNCTION : Parity Bit			
	DISPLAY		DESCRIPTION
Set value (0~2)	F38	0	Data bit 8, Stop bit 1, Non parity
	F38	1	Data bit 7, Stop bit 1, Even parity
	F38	2	Data bit 7, Stop bit 1, Odd parity

④ Printer Function

F40

FUNCTION : Line Feed			
	DISPLAY		DESCRIPTION
Set value (1~9)	F40	1	1 Line feed
	F40	9	9 Line feed

F41

FUNCTION : Printer			
	DISPLAY		DESCRIPTION
Set value (0~2)	F41	0	Do not use
	F41	1	CAS TOP printer (P202)
	F41	2	CP-7000 Series Printer (CP-7000D/P, CP-7024P)

F42

FUNCTION : Automatic / Manual Print			
	DISPLAY		DESCRIPTION
Set value (0~1)	F42	0	Manual print
	F42	1	Automatic print

Note 1. If .F42 is set to 1, printing is done without pressing PRINT key.
It is possible to print again only after the weight is returned to zero (unload)

F43

FUNCTION : Printer Format		
	DISPLAY	DESCRIPTION
Set value (0~2)	F43 0	Printing format 0
	F43 1	Printing format 1
	F43 2	Printing format 2

【 Form 0 】
Date, Time
Serial No., Net weight

【 Form 1 】
Date, Time
Serial No., Net weight

【 Form 2 】
Date, Time
Gross weight, Tare weight,
Tare weight

		02. 1. 1 12:30
	02. 1. 1 12:30	Gross : 1000.0 kg
	001, 50.0 kg	Tare : 0.0 kg
02. 1. 1 12:30	02. 1. 1 12:40	Net : 1000.0 kg
001, 50.0 kg	002, 50.0 kg	02. 1. 1 12:40
002, 100.0 kg	02. 1. 1 12:50	Gross : 2000.0 kg
003, 200.5 kg	003, 50.0 kg	Tare : 500.0 kg
		Net : 1500.0 kg
TOTAL 350.5kg	TOTAL 150.0kg	Net TOTAL 2500.0kg

Note 1. The serial number is initialized to 001 after total printing or power off and on.

F44

FUNCTION : Input user's Information to Printing Format		
Used key ▲ ▼ ▶ ◀ : Data Designation * key : Increase coordinate	DISPLAY	DESCRIPTION
	P12-065	Set 'A' (ASCII code 65) in 12th data
	P00-032	Set blank to 0th character This 0th code decides to print dead message.
	P18-255	Set 255 to 18th character. This code indicates the end of data to be printed.

Note 1. You can add user's information in printing format.
(Ex : Company name, phone no.)
Note 2. The range of coordinate is from 0 to 71. 0th code determines whether head message is printed or not.(032 : print, others : Do not print) Actually 1st data to 255 is printed.
Note 3. Designate as follows if you want to add company name "CAS" on print format.
P00-032(ASCII code 32 : Data start), P01-067(ASCII code 67 : character C)

P02-065(ASCII code 65 : character A),P03-083(ASCII CODE 83 :character S)
P04-255(ASCII code 255: Data end)

Note 4. ASCII code table

CHA	CODE	CHA	CODE	CHA	CODE	CHA	CODE	CHA	CODE	CHA	CODE
SPACE	32	0	48	@	64	P	80	`	96	p	112
!	33	1	49	A	65	Q	81	a	97	q	113
“	34	2	50	B	66	R	82	b	98	r	114
#	35	3	51	C	67	S	83	c	99	s	115
$	36	4	52	D	68	T	84	d	100	t	116
%	37	5	53	E	69	U	85	e	101	u	117
&	38	6	54	F	70	V	86	f	102	v	118
‘	39	7	55	G	71	W	87	g	103	w	119
(	40	8	56	H	72	X	88	h	104	x	120
)	41	9	57	I	73	Y	89	i	105	y	121
*	42	:	58	J	74	Z	90	j	106	z	122
+	43	;	59	K	75	[	91	k	107	{	123
,	44	<	60	L	76	\	92	l	108	|	124
-	45	=	61	M	77	]	93	m	109	}	125
.	46	>	62	N	78	^	94	n	110	~	126
/	47	?	63	O	79	_	95	o	111	END	255

F45

FUNCTION : Date Change		
KEY	DISPLAY	DESCRIPTION
▲ ▼ ► ◄ key : Enter Data	02.01.10	JAN. 10TH, 2002

F46

FUNCTION : Time Change		
KEY	DISPLAY	DESCRIPTION
▲ ▼ ► ◄ key : Enter Data	11.30.10	11 : 30 : 10 AM

⑤ User's utility

F50

FUNCTION : Set-point Input			
Set value (0, 1)	DISPLAY		DESCRIPTION
	F50	0	Disable external Set-point input
	F50	1	Enable external Set-point input

F51

FUNCTION : Load cell type			
Set value (0, 1)	DISPLAY		DESCRIPTION
	F51	0	Compression or Tension Load cell (0mV ~ +40mV)
	F51	1	Compression and Tension Load cell (– 20mV ~ +20mV)

F52

FUNCTION : Buzzer On/Off			
Set value (0, 1)	DISPLAY		DESCRIPTION
	F52	0	Always Buzzer is ON.
	F52	1	Always Buzzer is OFF.

⑥ Options

F55

FUNCTION : Select of Option		
	DISPLAY	DESCRIPTION
Set value (0,2)	F55 0	Do not use
	F55 1	Analog Out(Option – 1,2)
	F55 2	BCD Out(Option – 3)

F56

FUNCTION : Output Logic – BCD Out		
	DISPLAY	DESCRIPTION
Set value (0,1)	F56 0	Positive Logic
	F56 1	Negative Logic

F57

FUNCTION : Analog Output Adjustment at Display Zero		
	DISPLAY	DESCRIPTION
Set value (0~4000)	L 00000	0mA, 0V
	L 04000	4.000mA, 2V
	L 04015	4.015mA, 2.007V

F58

FUNCTION : Analog Output Adjustment at Maximum Capacity		
	DISPLAY	DESCRIPTION
Set value (0~24000)	H 10000	10mA, 4.16V
	H 20000	20.000mA, 8.33V
	H 24000	24.000mA, 10V

10. Test Mode

1) How to go to Test Mode

Open the front cover of indicator. set SW1 DIP3 on.

① tESt 1 : Select test menu that you wish to test.
② Please select test menu with arrow keys and press ENTER key.
③ tESt 1 : Test menu is selected. Proceed key test.
④ When test is done, Press ENTER key.

To finish test mode, set DIP3 off.

2) Test Menu (TEST 1 – TEST 8)

TEST 1 : Key test
TEST 2 : VFD display test
TEST 3 : A/D conversion test
TEST 4 : Serial interface test (COM1, COM2)
TEST 5 : Printer test (COM2)
TEST 6 : External input/output test
TEST 7 : Analog Out Test(Option)
TEST 8 : BCD Out Test(Option)

TEST 1

FUNCTION : Key test		
KEY	**DISPLAY**	**DESCRIPTION**
ENTER: Go to menu Selection mode	tESt 1	TEST 1 condition
Other keys : Perform test	1 1	Press any key to test then the display shows its number and code.

Note 1. External input key test is TEST 6.

< Key list >

KEY	NO.	CODE	KEY	NO.	CODE	KEY	NO.	CODE
ZERO	1	1	TARE	2	2	K.T	3	3
G/N	4	4	*	5	5	ENTER	6	6

TEST 2

FUNCTION : Display test		
KEY	**DISPLAY**	**DESCRIPTION**
ENTER: Go to menu Selection mode	tESt 2	TEST 2 condition
Other keys : Perform test	8888888	TEST 2 is performed

TEST 3

FUNCTION : A/D Conversion test		
KEY	**DISPLAY**	**DESCRIPTION**
▲ ▼ : Change gain. ► ◄ : Change filter ENTER: Go to menu Selection mode	tESt 3	TEST 3 condition
	97853	Shows digital value of current weight. This value means converted digital value.

Note 1. Check whether digital value is changing. If the digital value is fixed or zero is displayed, please check the connection of load cell.

TEST 4

FUNCTION : RS-232C test with computer (COM1)		
KEY	**DISPLAY**	**DESCRIPTION**
▲ : Transmit to PC after increasing value. ▼ : Transmit to PC after increasing value ENTER: Go to menu Selection mode	tESt 4	TEST 4 condition
	00-------00	Wait for transmission and reception
	03-------00	Transmit : 3, Receive : none
	08-------49	Transmit : 8, Receive : 1

Note 1. Do this test in Hyper Terminal of PC after the connecting serial port with PC.
- Port Selection in Hyper Terminal has the Flow Control item, you have to set nothing.

Note 2. Send no.1 in computer keyboard and check if indicator receives no.49
Send no.8 in indicator key(▲) and check if computer receives no.8

Note 3. Baud rate should be specified in SET mode before testing.(F31)

TEST 5

FUNCTION : Printer test (COM1)		
KEY	**DISPLAY**	**DESCRIPTION**
ENTER: Go to menu Selection mode	tESt 5	TEST 5 condition
Other keys : Perform test	Good	No error in printer.

Note 1. Please set F35 to 0 in SET mode.
Note 2. Please set F41(the kind of printer) in SET mode.
Note 3. "Good" message is displayed if the printer connection is done correctly.
Note 4. The test output format of printer is as follows:

Computer Aided System
CAS Corporation
TEL 82-2-2225-3500
FAX 82-2-475-4668
TEST OK

TEST 6

FUNCTION : External input /output test		
KEY	**DISPLAY**	**DESCRIPTION**
▲ ▼ : Move external Output External input : Shows external key ENTER: Go to menu Selection mode	tESt 6	TEST 6 condition
	In1oUt3	In1 : If you press 1, 1 is displayed oUt3 : Indicate the condition of external output. Output no.3 is On.

TEST 7

FUNCTION : Analog Output Test		
KEY	**DISPLAY**	**DESCRIPTION**
▲ : Output high value (20mA) ▼ : Output high value (20mA) ENTER: Go to menu Selection mode	tESt 7	TEST 7 condition
	Hi Lo	▲(Hi) (Lo)▼
	HiGH	HiGH : Output maximum weight. (Adjust to 20mA)
	Zero	ZEro : Output zero value (Adjust to 4mA)

TEST 8

FUNCTION : BCD Output Test		
KEY	**DISPLAY**	**DESCRIPTION**
▲ : All output is ON ▼ : All output is OFF ENTER: Go to menu Selection mode	tESt 8	TEST 8 condition
	ALL ON	The state of All Output is ON (Defult)
	ALL OFF	The state of All Output is OFF

11. Weighing Mode

1) How to move

Turn POWER switch on, and you will go to the Weighing Mode.

2) Available keys

KEY	DESCRIPTION
ZERO ◀	1. Used to remove small variations in the indicator's zero.
TARE ▶	1. Used to weigh an item by using the container.
	2. Save tare weight and shows net weight.
KEY TARE ▲	1. Used to enter tare weight manually
	2. If you press this key, "t 00000" is shown on the display.
	3. Enter tare weight with arrow keys and save it by pressing the ENTER key.
GROSS NET ▼	1. Toggles between gross weight and net weight
	2. You can prohibit using of keyboard by pressing G/N key for 4 sec to use keyboard again, press G/N key for 4 sec
*	1. "*" is used in various way.
	2. Used to input the set-point value for batching operation (Press * key for 2 seconds)
	3. You can select this key's function in SET mode F23. 0. Do not use. 1. PRINT Key. 2. HOLD Key.
ENTER	1. ENTER key is used in various way.
	2. You can select this key's function in SET mode F24. 0. Do not use 1. TOTAL PRINT key. 2. START key for batching operation 3. STOP key for batching operation
	3. Set set-point code for batching operation.(00~49) (Press the ENTER key for 2 sec.)

3) External Control for Input / Output Interface

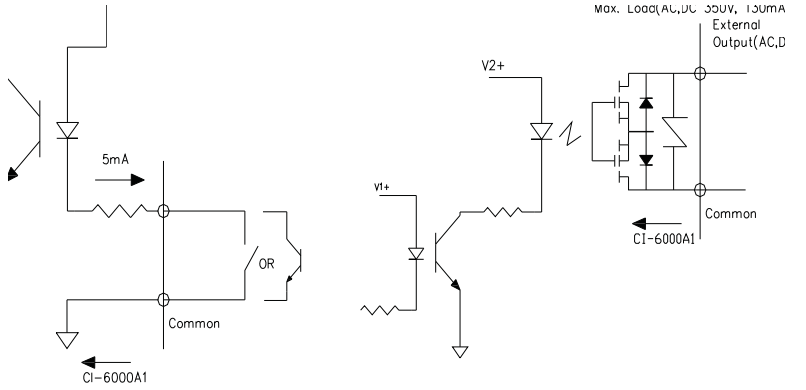
■ External input

Pin No.	SIGNAL LINE NAME	DESCRIPTION
24, 25	GND (Input common)	External input common
16	ZERO input	ZERO key operation
17	TARE input	TARE key operation
18	START input	Used as START key in batching operation
19	STOP input	Used as STOP key in batching operation
20	"*" input	"*" is used in various way (Set this key in SET mode F23)
21	ENTER input	"*" is used in various way (Set this key in SET mode F24)
22, 23	Buffer	Enable to add the Key function

■ External output (Relay contact)

Pin No.	SIGNAL LINE NAME	Pin No.	SIGNAL LINE NAME
3	Zero band signal output (Out 1)	7	High limit signal output (Out 5)
4	Optional preliminary output (Out 2)	8	Low limit signal output (Out 6)
5	Preliminary output (Out 3)	9	Finish signal output (Out 7)
6	Final weight signal output (Out 4)	10	Stable signal output (Out 8)
11, 12	Output common		

■ External control I/O circuit



4) How to input the set-point code (00 ~ 49)

There are two ways to input the set-point code

■ First way

Press the ENTER key for 2 seconds to enter set-point (Set-point : 00~49)

DISPLAY	DESCRIPTION
Code = 00	Set – point Code Number=00 in weighing control
Code = 49	Set – point Code Number=49 in weighing control

■ Second way

You can enter set-point by using RS-232C, RS-485 Communication
Refer to SET Mode. (In the case of F33 = 4 or F36 = 4, Command Mode)

■ How to clear the Set-Point value (00 ~ 49)

After input "F88" in the SET Mode, press ENTER key and can see the "Factor" and "0000" on the display

After input "2007" and ENTER key, can see the "SP init". In a few seconds, can see the message of "End" and then exit the SET Mode. It is accomplished

5) How to input the set-point value

There are four ways to input the set-point value

■ First way (F50 = 0)
To enter set-point, press the * key for 2 seconds in weighing mode

Note 1. Set F50 to 0 in set mode
Note 2. Shift the position of cursor with ►,◄ key and enter set value with ▲ , ▼ key to go to next step, press the * key

STEP	DISPLAY	DESCRIPTION
STEP1	Point	Zero Band Shift the position of cursor with ►,◄ key and Enter Zero band value with ▲ , ▼ key To go to next step, press the * key
	ZEro bA	
	1 - 00000	
STEP2	oP - Pre	Optional Preliminary Input first weight
	2 - 00000	
STEP3	PrELiM	Preliminary weight Input Preliminary weight
	3 - 00000	
STEP4	FinAL	Final weight Input final weight
	4 - 00000	
STEP5	FALL	Free Fall Weight Input free fall weight
	5 - 00000	
STEP6	H - LiMit	High Limit Weight Input high limit weight
	6 - 00000	
STEP7	L - LiMit	Low Limit Weight Input low limit weight
	7 - 00000	

■ Second way (F50 = 0)
Enter set value from F1 to F17 in set mode.

F11 : Zero Band
F12 : Optional Preliminary Weight
F13 : Preliminary Weight
F14 : Final Weight
F15 : Free Fall Weight
F16 : High Limit Weight
F17 : Low Limit Weight

■ Third way
Enter set-point by using RS-232, RS-485 Communication
Set F33 to 4 in set mode. Refer to set mode. (F33)

6) Set-point Condition

Output is done according to the following condition in batching operation.

MODE	OUTPUT	CONDITION
COMMON	Zero band output	GROSS weight ≤ Zero band
NORMAL	Optional preliminary weight output	NET weight ≥ Final weight – Optional preliminary weight
Loss – in	Optional preliminary weight output	GROSS weight > Optional preliminary weight
COMMON	Preliminary weight output	NET weight ≥ Final weight - Preliminary weight
COMMON	Final weight Output	NET weight ≥ Final weight - Free fall weight
COMMON	High limit weight Output	NET weight > Final weight + High limit weight
COMMON	Low limit weight Output	NET weight < Final weight - Low limit weight

7) Batching Operation

You can select batching operation method in set mode, F20.

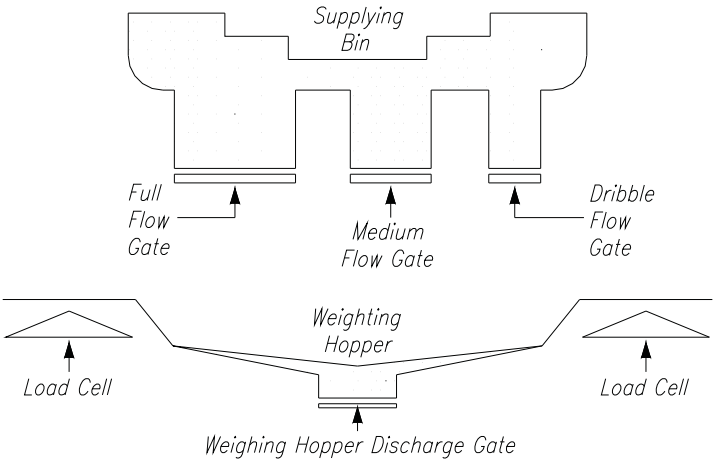
a. USER PROGRAM CONTROL MODE

- ■ Normal Batching
- ■ Loss-in-Weight Batching

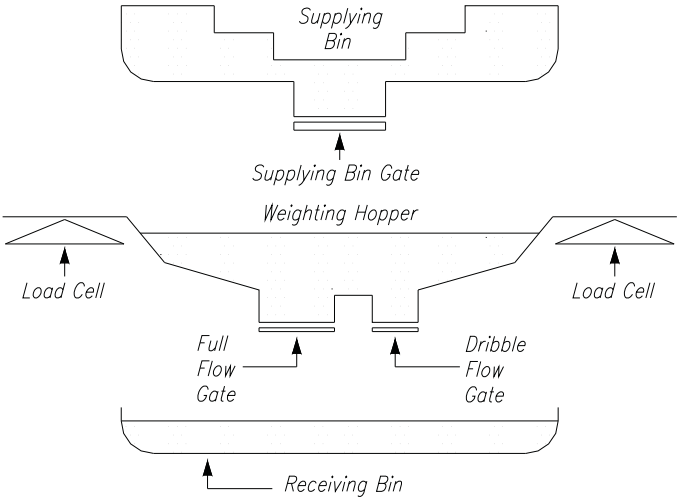
b. AUTOMATIC PROGRAM CONTROL MODE

- ■ Normal Batching
- ■ Loss-in-Weight Batching

< Normal Batching Diagram >

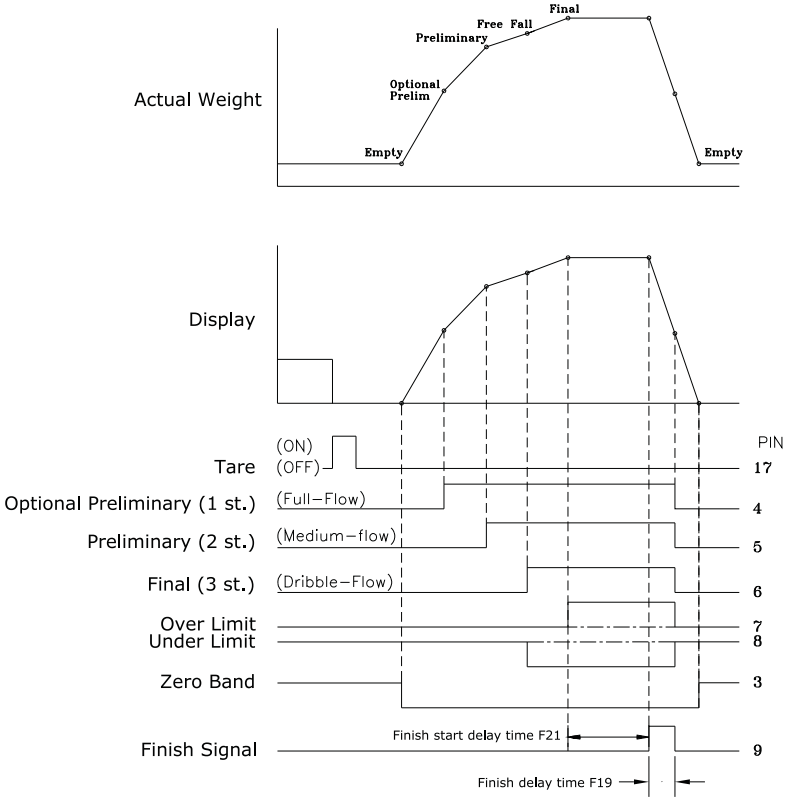


< Loss-in-Weight Batching Diagram >



USER PROGRAM CONTROL MODE

< Normal Batching >



■ You can operate external control for your needs in user program control mode.
■ External input and output signal is as follows.

1. Press TARE key so that the display shows 0kg (NET weight).

2. FIRST OUTPUT(Optional preliminary) :
   It is ON when the net weight is greater than the weight
   (Final - Optional preliminary).

3. SECOND OUTPUT(Preliminary) :
   It is ON when the net weight is greater than the weight (Final - Preliminary).

4. THIRD OUTPUT(Final) :
   It is ON when the net weight is greater than the weight (Final - Free fall).

5. HIGH LIMIT OUTPUT :
   It is ON when the net weight is greater than the weight (Final + High limit)
   after third output is ON.

6. LOW LIMIT OUTPUT :
   It is ON when the net weight is greater than the weight (Final - Low limit)
   after third output is ON.

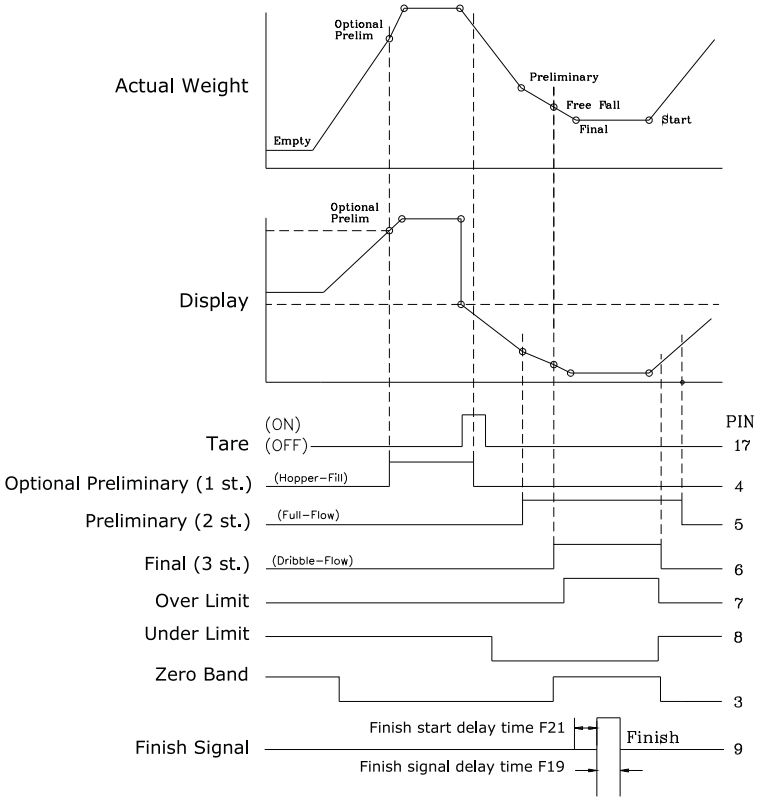
7. FINISH SIGNAL :
   When weight is stable, It is ON after passing the certain time of start delay
   (You can set start delay time in set mode, F21.)
   It is OFF after passing the certain time of operating delay or Finish Signal OFF
   Range (F22). (You can set operating delay time in set mode, F19.)

8. ZERO BAND OUTPUT :
   It is ON when gross weight is lower than zero band value.

9. Discharge gate control signal is not supplied in CI-6000A.
   - Use FINISH SIGNAL OUTPUT.

10. Prepare for next batching operation.

USER PROGRAM CONTROL MODE
< Loss-in-Weight >



■ You can operate external control for your needs in user program control mode.
■ External input and output signal is as follows.

1. FIRST OUTPUT(Optional preliminary) :
   It is ON when the gross weight is greater than optional preliminary weight.
   It is OFF when the gross weight is lower than final weight.
   - Fill in the hopper by using first output signal.

2. Press TARE key so that the display shows 0kg (NET weight).

3. SECOND OUTPUT(Preliminary) :
   It is ON when the net weight is greater than the weight (Final - Preliminary).

4. THIRD OUTPUT(Final) :
   It is ON when the NET weight is more than the weight (Final - Free fall).

5. HIGH LIMIT OUTPUT :
   It is ON when the net weight is greater than the weight (Final + High limit) after third output is ON.

6. LOW LIMIT OUTPUT :
   It is ON when the net weight is greater than the weight (Final - Low limit) after third output is ON.

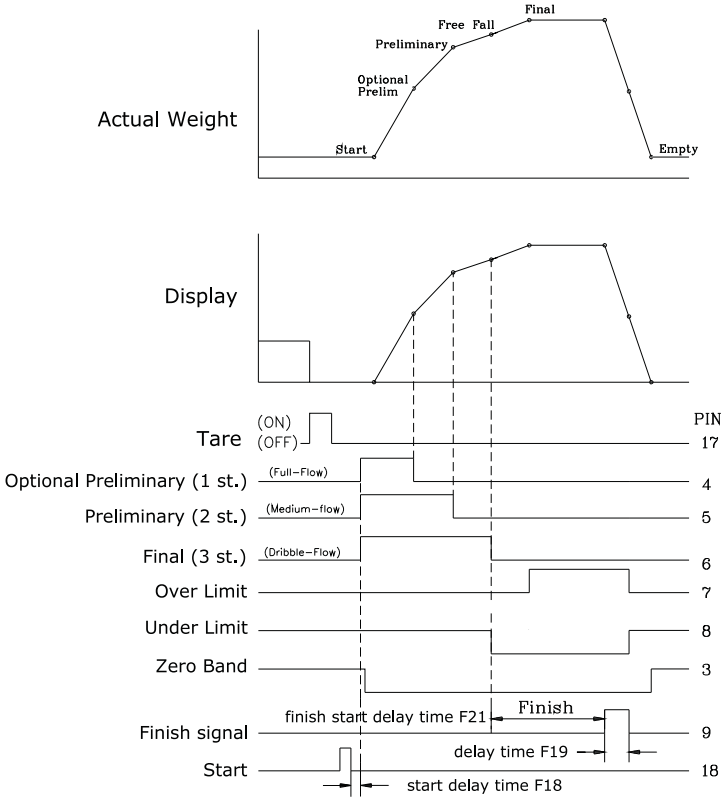
7. FINISH SIGNAL :
   When weight is stable, It is ON after passing the certain time of start delay (You can set start delay time in set mode, F21.)
   It is OFF after passing the certain time of operating delay or Finish Signal OFF Range (F22). (You can set operating delay time in set mode, F19.)

8. ZERO BAND OUTPUT :
   It is ON when the gross weight is lower than zero band value.

9. Discharge gate control signal is not supplied in CI-6000A.
   - Use FINISH SIGNAL OUTPUT.

10. Prepare for next batching operation.

AUTOMATIC PROGRAM CONTROL MODE
< Normal Batching >

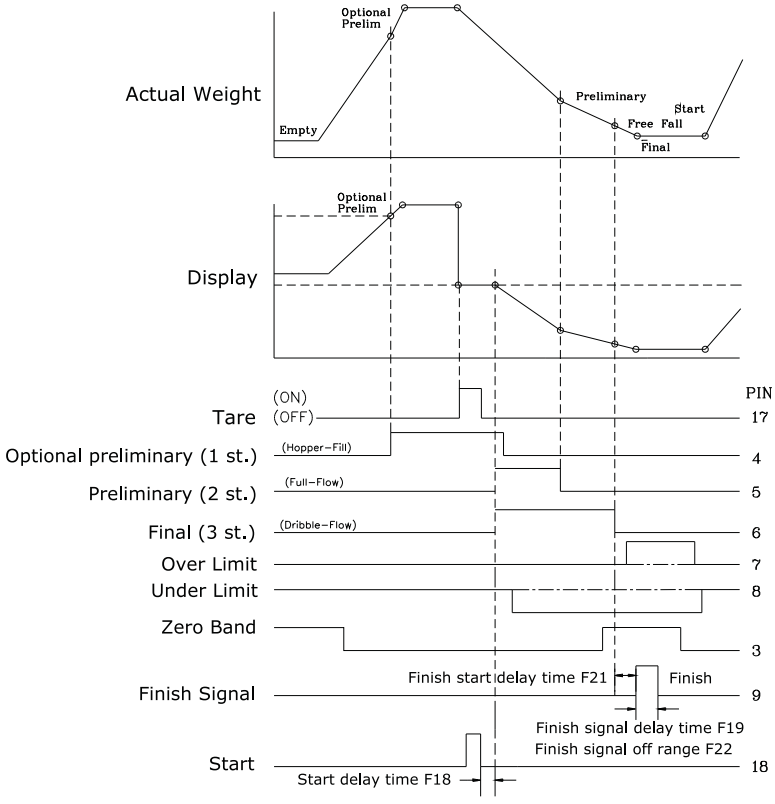


■ Output/input is controlled according as the program of an indicator in utomatic program control mode.

■ External input and output signal is as follows.

1. Press TARE key so that the display shows 0kg (NET weight).
2. START INPUT: FIRST, SECOND, THIRD output is ON when START key is pressed.
3. FIRST OUTPUT (Optional preliminary) :
   It is OFF when the net weight is greater than the weight (Final - Optional preliminary).
4. SECOND OUTPUT (Preliminary) :
   It is OFF when the net weight is greater than the weight (Final - Preliminary).
5. THIRD OUTPUT (Final) :
   It is OFF when the net weight is greater than the weight (Final - Free fall).
6. HIGH LIMIT OUTPUT :
   It is ON when the net weight is greater than the weight (Final + High limit) after third output is ON.
7. LOW LIMIT OUTPUT :
   It is ON when the net weight is greater than the weight (Final - Low limit) after third output is ON.
8. FINISH SIGNAL :
   When weight is stable, It is ON after passing the certain time of start delay. (You can set start delay time in set mode, F21.)
   It is OFF after passing the certain time of operating delay or Finish Signal OFF Range (F22). (You can set operating delay time in set mode, F19.)
9. ZERO BAND OUTPUT :
   It is ON when gross weight is lower than zero band value.
10. Discharge gate control signal could not be supplied in CI-6000A.
    - Use FINISH SIGNAL OUTPUT.
11. Data Output : Data is outputted after finish signal is outputted.
12. Prepare for next batching operation.

AUTOMATIC PROGRAM CONTROL MODE
< Loss-in-Weight >



■ Output/input is controlled according as the program of an indicator in automatic program control mode.

■ External input and output signal is as follows.

1. FIRST OUTPUT (Optional preliminary) :
   It is ON when the gross weight is greater than optional preliminary weight.
   It is OFF when the gross weight is lower than final weight.
   - Fill in the hopper by using first output signal.

2. Press TARE key so that the display shows 0kg (NET weight).

3. START INPUT: FIRST, SECOND, THIRD output is ON when START key is pressed.

4. SECOND OUTPUT (Preliminary) :
   It is OFF when the net weight is greater than the weight (Final - Preliminary).

5. THIRD OUTPUT(Final) :
   It is OFF when the net weight is greater than the weight (Final - Free fall).

6. HIGH LIMIT OUTPUT:
   It is ON when the net weight is greater than the weight (Final + High limit) after third output is ON.

7. LOW LIMIT OUTPUT:
   It is ON when the net weight is greater than the weight (Final - Low limit) After third output is ON.

8. FINISH SIGNAL:
   When weight is stable, It is ON after passing the certain time of start delay. (You can set start delay time in set mode, F21.)
   It is OFF after passing the certain time of operating delay or Finish Signal OFF Range (F22). (You can set operating delay time in set mode, F19.)

9. ZERO BAND OUTPUT: It is ON when gross weight is lower than zero band value.

10. Discharge gate control signal is not supplied in CI-6000A.
    - Use FINISH SIGNAL OUTPUT.

11. Data Output : Data is outputted after finish signal is outputted.

12. Prepare for next batching operation.

8) Error Message

Error 01

▣ Reason

The weight is unstable to initialize the scale

☞ Solution

Put the scale on a stable place and turn on the power

Error 02

▣ Reason

Load cell connection failure or error in A/D conversion part.

☞ Solution

Check the load cell connector to see if the polarity of signal is reversed

Error 05

▣ Reason

You pressed any key for long time or problem of key part

☞ Solution

If there is no problem in key part, call your CAS dealer

Error 08

▣ Reason

You have set the operating condition of ZERO key or TARE key not to operate when the indicator is not stable.

☞ Solution

Reset the operating condition of ZERO and TARE key in SET mode F09

Error 09

▣ Reason

Current weight deviates from zero range

☞ Solution

Set the operational range of the ZERO key within 2% or 10% of the maximum capacity in SET mode F08

Error 10

▣ Reason

Tare weight exceeds the maximum capacity of the scale

☞ Solution

Tare weight should be lower than the maximum capacity.
Otherwise, the maximum capacity should be greater than the tare

Error 13

▣ Reason

The zero range deviates from the set range

☞ Solution

Confirm that there is nothing on the platter.
If nothing exists, do calibration in CAL mode

Error 14

▣ Reason

Gross weight is lower than final Weight in Loss-in-weight batching of Built-in automatic program mode

OVER

▣ Reason

The weight is exceeds maximum capacity of the indicator

☞ Solution

Do not load the item exceeds the maximum tolerance.
If the load cell is damaged, the load cell should be replaced

12. Serial Interface (COM1, COM2)

COM1,COM2		Baud Rate
F30	Device ID	00 ~ 99

COM1		Transmission Mode
F31	Baud Rate	600, 1200, 2400, 4800, 9600, 19200 bps
F32	A Use of COM1	Printer, Sub-display or Computer
F33	Output Mode	Stream, Stable, Data is required, Command mode

COM2		Transmission Mode
F34	Baud Rate	600, 1200, 2400, 4800, 9600, 19200 bps
F35	A Use of COM2	Printer, Sub-display or Computer
F36	Output Mode	Stream, Stable, Data is required, Command mode

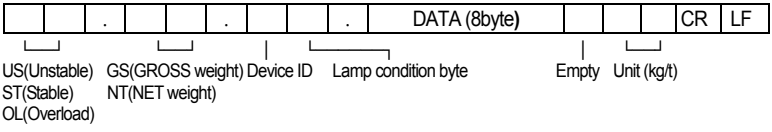
COM1,COM2		Data Format
F37	Data Out Format	22bytes and 10bytes of CAS, 18bytes of AND

①. 22 bytes of CAS

- Data bit : 8, Stop bit : 1, Parity bit : None
- Code : ASCII
- When the data is sent to computer?
  Select in SET mode
  ■ Transmit always : 1 is selected in F33, F36.
  ■ Transmit when weight is stable : 2 is selected in F33, F36.
  ■ Transmit when data is required : 3 is selected in F33, F36.

Indicator print output format when computer transmits 1 byte of device ID to an indicator.

- Transmission data format (22 BYTE)



- Device ID : Transmit 1 byte of device ID so that the receiver can receive data selectively which indicator send.(Device ID is set in F30 .)

- Lamp condition byte : Indicate on/off

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	Stable	0	Hold	Print	Gross	Tare	Zero

- Data(8 byte) : If 13.5kg, Each ASCII code '0', '0', '0', '0', '1', '3', '.', '5' is transmitted by 8 byte.

- Output error message

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
E	R	R			Error code		CR	LF

② 10 bytes of CAS

- Data bit : 8, Stop bit : 1, Parity bit : None
- Code : ASCII
- Transmission data format (10 BYTE)

DATA (8 byte)	CR	LF

③ 18 bytes of AND

- Data bit : 8, Stop bit : 1, Parity bit : Even
- Code : ASCII
- Transmission data format (18 BYTE)

		.			.	DATA (8byte)			CR	LF

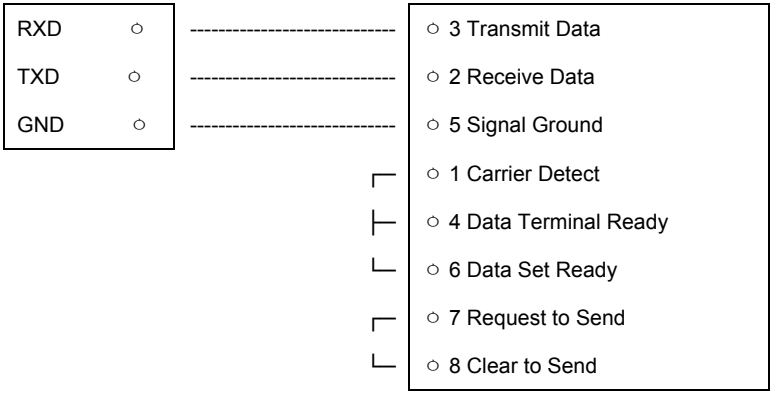
US(Unstable) ST(Stable) OL(Overload)

GS(GROSS weight) NT(NET weight)

Unit (kg/t)

COM1, COM2	RS-232C Connection

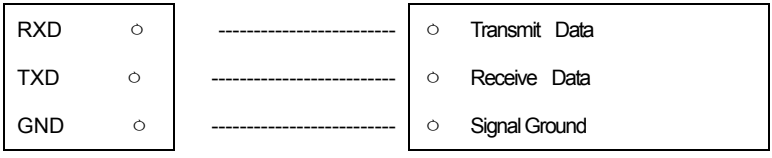
(1) COM1 - TXD : 2 pin, RXD : 3 pin, GND : 7 pin
(2) COM2 - TXD : 2 pin, GND : 5 pin



9 pin port(Male)
RS-232C port of Cl-6000A

9 pin port(Female)
Serial port of computer

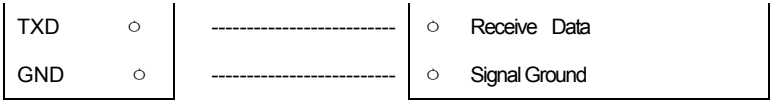
COM1	PC



9 pin port(Male)
RS-232C port of Cl-6000A

9 pin port(Male)
RS-232C port of PC

COM2	Sub-display, Serial Printer



9 pin port(Male)
RS-232C port of Cl-6000A

Port of sub-display, serial printer

COM2	RS-422 Connection

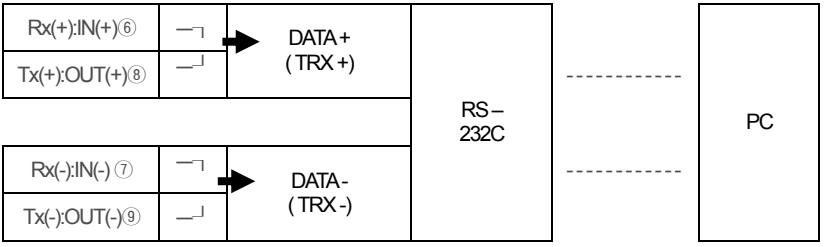
COM 2 - OUT (+) : 8pin, OUT(-) : 9pin
IN(+) : 6pin, IN(-) : 7pin

- Transfer Mode : Same to the RS-232C interface

F30	Device ID	00 ~ 99
F34	Baud Rate	600,1200,2400,4800,9600,19200bps
F36	Output Mode	Stable, Stable or Unstable, Command mode

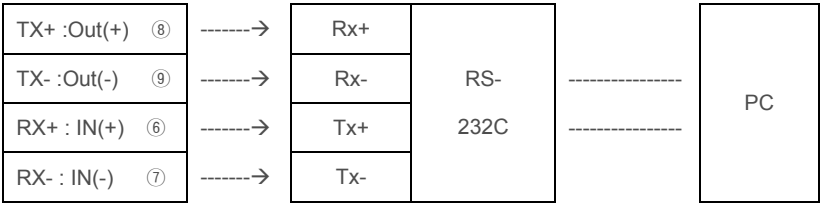
Data Format : Same to the RS-232C interface(Only Tx of Indicator)

- How to connect to the RS-485 port



9pin port (Male) RS-485 Convertor
RS-485 port of CI-6000A

- How to connect to the RS-422 port



9pin port (Male) RS-422 Convertor
RS-422 port of CI-6000A

13. OPTIONS

OP-1	Analog Output Interface (Current Output)

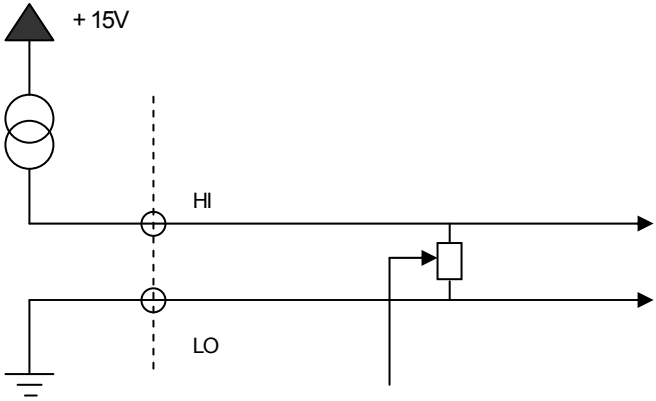
■ Set F56 to 1 in set mode.

■ Specification

Output Current	4 – 20mA, 0 – 20mA, 0 – 24mA
Resolution	More than 1/2000
Temperature Coefficient	0.01%
Maximum Load Resistor	500Ω MAX.

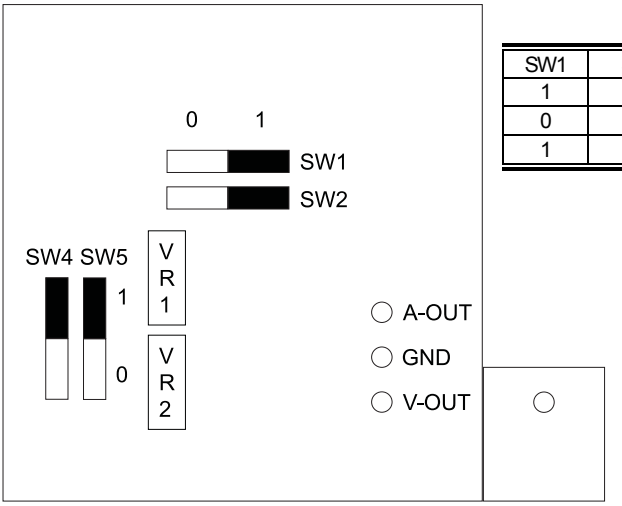
■ When the display weight is "0", the output current is 0mA or 4mA.
When the display weight is maximum capacity of the indicator, the output current is 20mA or 24mA.

■ To use current to voltage
If you add a 250Ω shunt resistor, voltage output will be 1 - 5V or 0 – 5V or 0 – 6V.
(250Ω * 4mA ~ 250Ω * 20mA)



Shunt Resistor

■ Switch setting



SW1	SW2	Output
1	1	0 – 24mA
0	1	0 – 20mA
1	0	4 – 20mA

	Fixing or Flexibility		Setting		Set Mode		Output Current
	SW4	SW5	SW1	SW2	F57(Min)	F58(Max)	
Fixing	0	0	1	1	4000	20000	4 – 20mA
					0000	20000	0 – 20mA
					0000	24000	0 – 24mA

When you use the Fixing Mode (SW4=SW5=0),
you have to set one(1) of the SW1 & SW2 and
you have to set the values what you want to out in the SET MODE (F57 & F58)

	Fixing or Flexibility		Setting		Set Mode		Output Current
	SW4	SW5	SW1	SW2	F57(Min)	F58(Max)	
Flexibility	1	1	1	1	0000	24000	0 – 24mA
			0	1			0 – 20mA
			1	0			4 – 20mA

When you use the Flexibility Mode (SW4=SW5=1),
you select to set the setting switches what you want to out

If the output current is not correct, you need to adjust the volume resistors of VR1 & VR2.
VR1 is used to adjust to zero value. VR2 is used to adjust to Max. value.

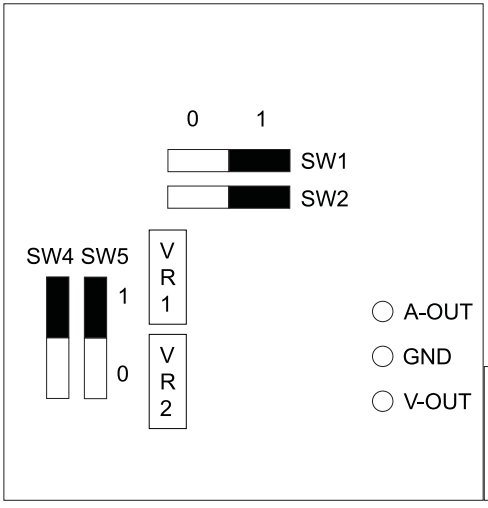
OP-2	Analog Output Interface (0-10V)

■ Set F56 to 1 in set mode.

■ Specification

Output Voltage	0 – 10V
Resolution	More than 1/2000
Temperature Coefficient	0.01%

■ The output voltage is 0V when the display weight is "0".
And the output voltage is 10V when the display weight is maximum capacity of the indicator.



SW1	SW2	Output
0	0	0 – 10V

	Fixing or Flexibility		Setting		Set Mode		Output Current
	SW4	SW5	SW1	SW2	F57(Min)	F58(Max)	
Flexibility	0	0	0	0	0000	24000	0 – 10V

You have to set zero(0) of the SW1, SW2, SW4 and SW5

OP-3	BCD Output Interface

Parallel BCD output is the interface that transmits the weight as BCD code.
Inner circuit of input/output circuit is electronically disconnected by photo-coupler

■ Set F55 to 2 in set mode.

■ Transmission mode

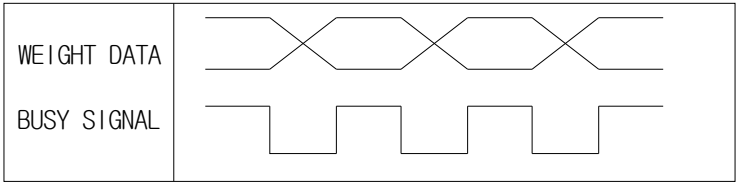
F56	Output Logic	Positive Logic, Negative Logic

■ Pin Connection

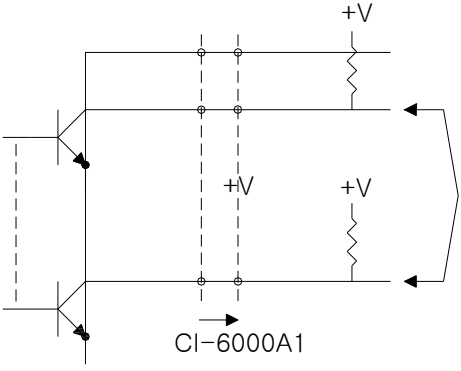
PIN	SIGNAL	PIN	SIGNAL
1	Ground (GND)	26	High : Net, Low : Gross
2	1 x 10^0	27	N.C.
3	2 x 10^0	28	N.C.
4	4 x 10^0	29	N.C.
5	8 x 10^0	30	N.C.
6	1 x 10^1	31	N.C.
7	2 x 10^1	32	N.C.
8	4 x 10^1	33	N.C.
9	8 x 10^1	34	N.C.
10	1 x 10^2	35	N.C.
11	2 x 10^2	36	N.C.
12	4 x 10^2	37	External Vcc
13	8 x 10^2	38	N.C.
14	1 x 10^3	39	External Vcc
15	2 x 10^3	40	N.C.
16	4 x 10^3	41	N.C.
17	8 x 10^3	42	High : +, Low : -
18	1 x 10^4	43	Decimal point : 10^1
19	2 x 10^4	44	Decimal point : 10^2
20	4 x 10^4	45	Decimal point : 10^3
21	8 x 10^4	46	Over Load
22	1 x 10^5	47	N.C.
23	2 x 10^5	48	N.C.
24	4 x 10^5	49	Busy
25	8 x 10^5	50	

■ 50 pin connector : CHAMP 57-40500(Amphenol) Female
■ TTL Open-Collector Output
■ SIGNAL LOGIC
1. BCD data output : Positive, Negative logic
2. Polarity output : “+” = High
3. OVER output : “OVER" = High
4. BUSY output : “BUSY” = High
■ Standard Accessory :
Mating connector 57-30500(Amphenol) Male 1EA.

■ Weight Data



■ BCD output circuit



Voltage	30V max.
Current	30mA max.
Output Voltage when ON	0.2V Txp

■ BCD output circuit is Open Collector Type.

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CI-6000A SERIES

Weighing Indicator

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Specifications are subject to change for improvement without prior notice.

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